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ABSTRACT

A process study was conducted between 2000-2001 in order to gauge the progress of 98 Connecticut institutions that received state school-to-career (STC) grants. Progress was measured against national averages. The following were among the findings: (1) grantees made significant progress in implementing fundamental STC components, such as career clusters (50% had implemented all eight), partnerships with business (average number per institution was 82) and community based organizations (average number was 16), and career centers (92% of high schools and vocational technical schools had at least one center and almost 92% of elementary and/or middle schools reported a career component); (2) all grantees made STC systems available to all students, i.e. activities were not targeted toward particular types of students; (3) Connecticut scored at or slightly below national averages for actual student participation in STC systems; (4) according to an adapted measure of STC sustainability, grantees rated their institutions as having made strong progress in gaining the support of the school board and business/community partners, providing professional development and offering STC student activities; and (5) the most frequently cited differences that STC made for students were valuable work experiences, increased preparedness, and increased skill level. Sixty-one percent of respondents reported at least one barrier or challenge to implementation of their institutions' STC goals. It was concluded that while Connecticut had made great strides in implementing STC systems, the prospect of sustainability was not consistent

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statewide and it would be difficult for an institution to implement a sustainable STC system without a coordinator or other dedicated staff. (There are seven tables and two sidebars. The bibliography lists two references.) (AJ)

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Providing Opportunities for All Students: Findings from the Process Evaluation of Connecticut's School-to-Career System

October 2001

Prepared for
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Executive Summary

Introduction

The School-to-Work Opportunities Act of 1994 provided resources to states and local partnerships to strengthen systems that help prepare young people for work and further education. The Act was in response to longstanding concerns among policymakers, business leaders, educators, and others that the demands of the high-skill job market for well-trained workers were not being met.

The Act did not prescribe a pre-defined program for states and local schools to implement. Instead, it broadly described the characteristics of a system that could be integrated with the normal educational activities of schools. It provided seed money over a five-year period to states and local partnerships for development of their own STW systems.

The Act required that systems feature the following three components:

- **School-based learning** focused on achieving high academic standards;
- **Work-based learning** leading to the attainment of workplace competencies; and
- **Connecting activities** to integrate school-based and work-based learning.

Overview of the Connecticut School-to-Career System

In Connecticut, state leaders developed a School-to-Career (STC) System that addresses the three main components of the Federal legislation while allowing for considerable discretion at the local level as to the specific activities to be undertaken. It established a multi-layered, state-regional-local structure consisting of a wide variety of partners. Key partners include the state Employment and Training Commission, the Department of Education (SDE), the Department of Labor, the Connecticut Business and Industry Association (CBIA), the Department of Higher Education, community colleges, Regional Education Service Centers (RESC), Regional Workforce Development Boards (RWDB), and others.

Key features of the statewide STC system include:

- Adoption of eight career majors (called Career Clusters) and accompanying informational materials for educators, parents, and students;
- Development of industry/technical skill standards for each of the career clusters;

- Establishment of the Connecticut Career Certificate (CCC), a portable credential signifying master of academic, employability, and technical skills within one of the career clusters;

- Provision of a variety of STC-related professional development related to curriculum revision, teaching strategies, sustainability, among other activities; and

- Development of monitoring and evaluation strategies.

The state is divided into eight regional partnerships, each of which consists of representatives from RESCs, RWDBs, and community colleges. In addition, a SDE consultant is assigned to each region. Together, these partners provide a variety of technical assistance to local districts.

At the local level are school districts, vocational-technical schools, colleges, and universities, along with businesses and other community partners. School districts, vocational-technical schools, colleges, and universities are eligible to receive state STC grants. Rather than awarding grants to all of these institutions, SDE developed a competitive demonstration grant program to provide large, two-year grants to select sites. Fourteen institutions were selected as demonstration sites, and they received grants for the 1995-96 and 1996-97 school years. The intent was for these sites to begin designing and implementing STC systems, so that they could share lessons learned and provide models for other sites.

During the 2000-01 school year, 98 institutions received state STC grants. There are 118 school districts that have been approved to award the CCC, representing about 70 percent of all Connecticut districts.

Abt Associates' Process Evaluation

To gauge the progress of the institutions that received STC grants, Abt Associates conducted a process study beginning in June 2000 and continuing through the 2000-01 school year. Abt Associates' staff worked with SDE to conduct two surveys during this period – one in January 2001 and one in June 2001. Abt Associates' staff also conducted site visits to four high schools and reviewed Connecticut's STC reports. Additionally, where appropriate, Abt Associates' staff utilized data from the most recent National STW Progress Measures Survey comparing Connecticut with U.S. averages. These data were collected during the 1999-2000 school year as part of the National Evaluation of STW.

Abt Associates examined the following questions in undertaking the process study:

- To what extent have grantees implemented fundamental STC components such as career clusters, STC Coordinators, career centers, partnerships with business, and STC components at the elementary and middle levels?

- To what extent are students at grantee institutions participating in STC systems, which include activities such as internships, job shadowing, career awareness, and career cluster selection? Are certain students targeted for participation in STC activities, or are opportunities made available for all students to participate? How do Connecticut's levels of participation compare to national averages?

- How sustainable are the STC systems of grantee institutions, based on the implementation of fundamental STC components and the perceptions of grantees?

- According to the perception of grantee institutions, what difference has STC made for students and the schools?

Study Results

Implementation of STC Components. Overall, grantees have made significant progress in implementing fundamental STC components, which are features of the system that are important for sustainability and working toward all student participation.

Half of the responding grantees reported that they had implemented each of the state's eight career clusters, which meant they have made them available as career majors for students. The remaining grantees implemented seven or fewer clusters. Each of the clusters has been implemented by between 61 and 85 percent of grantees.

Grantees reported that they had formed a total of 7,677 partnerships with businesses and community-based organizations (CBO) by the end of the 2000-01 school year. The average number of business partnerships per institution was 82 and the average number of CBO partnerships was 16. Each partnership varies – some involve one activity, while others involve multiple activities. Half of the reported partnerships involved job shadowing for students, which was the most common activity. The next most frequent activities were career fairs, classroom activities, internships, and field trips.

Ninety-two percent of the responding high schools and vocational technical schools reported having at least one career center. More than half (51 percent) of the career centers reported in the survey were established in 1997 or later, which is when the state STC grant funds became available.

Almost all (92 percent) of the school districts reported having a career component taught in their middle and/or elementary school(s). In these districts, the career components consist of career awareness and exploration, and 74 percent of them have a curriculum.

Student Participation. Each responding grantee indicated that their STC systems are for all students; activities are not targeted toward particular types of students by ability or post-secondary plans. Levels of participation vary considerably, however.

The number of students receiving the CCC has risen steadily since 1998 (the first year CCCs were available), but it remains a small percentage of the student body. In 2001, 569 students received the CCC. Each of the eight career clusters were represented; the largest number was for the "Retail, Tourism, Recreation and Entrepreneurship" cluster (18 percent of CCCs), and the lowest number went to the "Construction: Technologies and Design" cluster (6 percent).

Students are more likely to be involved with STC activities such as career counseling than with more intensive STC activities such as internships. During the 2000-01 school year, 72 percent of high school students participated in career counseling, as did 62 percent of middle school students and 29 percent of elementary school students. Half of high school and middle school students participated in portfolio development, as did 11 percent of elementary school students. Half of high school and middle school students participated in a career interest survey, as did 11 percent of elementary school students. One-third of high school students had selected a career cluster by the end of the year. Twelve percent of high school students completed a job shadow, as did seven percent of middle school students and three percent of elementary school students. Three percent of high school students completed an internship.

Although the most recent data from the National STW Evaluation are from the 1999-2000 school year, it is useful to compare Connecticut's progress with national averages. Generally, on measures relating to schools' availability of STC activities for students, Connecticut tends to score higher than national averages. On measures regarding actual student participation in those activities, Connecticut tends to score at or slightly below national averages. Likewise, on measures concerning the percent of schools offering STC-influenced curriculum, Connecticut scores higher than national averages. On measures relating to the percents of students participating in these curricula, Connecticut tends to score at or slightly below national averages.

Perceptions of Sustainability, Impact on Students/Schools, and Barriers to Implementation. Grantees were asked to report perceptions of their institutions' progress toward sustainability, the impact of STC on students/schools, and barriers to implementation.

Using an adapted measure of STC sustainability, grantees generally rated themselves highly on most measures of sustainability. In particular, they indicated that the strongest progress has been made in areas such the support of school board and business/community partners, the availability of STC-related professional development, coordination of STC activities through a single point

of contact, and the availability of STC activities for students. They report that less progress has been made in areas such as release time for teachers, the integration of STC in classroom instruction, and the availability of broad career paths for students.

Grantees were asked to provide examples of what difference, if any, STC has made for students. Responses were coded into broad categories. The most frequent responses cited the valuable work experiences that students had gained in their fields of interest, the increased preparedness of students to make decisions regarding careers and higher education, and the increased skill level of students. A sample of responses is included in the full report.

Additionally, grantees were asked to indicate how STC has affected the school as a whole. Again, responses were coded into broad categories. The most frequent responses included strengthened relationships between the school and the community/businesses, the availability of increased training for educators, and the revision of curriculum to integrate skill standards and/or career awareness. A sample of responses is included in the full report.

Grantees were asked to list the goals and objectives of their 2000-01 state STC grant and to describe any challenges or barriers that could prevent them from being carried out. Sixty-one percent of respondents reported at least one challenge/barrier. The most frequently cited responses were the following:

- Staffing – the need to increase the number and/or time commitment of staff working on STC issues given the many responsibilities of STC Coordinators and related staff;
- Transportation – the lack of transportation for students to get to and from work-site experiences (noted most frequently by rural school districts);
- Teacher support – the lack of interest on the part of some teachers to STC, or their resistance to it; and
- Release time – the lack of available release time for teacher externships or other professional development during the school year.

Conclusions

STC is an instructional system that both supports and is aligned with broader school improvement initiatives. A STC system consists of three pillars: school-based learning (skills taught in classroom, career awareness, relevancy to the real world); work-based activities (internships and job shadows in careers that interest the student); and connecting activities (mechanisms linking school-based learning with work-based experiences).

Connecticut's multi-layered, state-regional-local approach has been successful in helping local schools design and implement STC systems. There is a large and diverse body of state, regional, and local organizations that have been active in providing technical assistance and other resources to local schools in support of STC. Of the schools that received state STC grant support during 2000-01, high percentages have undertaken or are currently implementing the fundamental components of STC systems such as skills-based curricula, work-based experiences, professional development for educators, career awareness and planning, and resources to support those activities (STC Coordinator, business/community partners, career centers, etc.). An important element of Connecticut's statewide plan has been that STC systems should be available for all students. All of the surveyed grantees reported that their systems are aimed at all students.

While every grantee has at least some of these components in place and STC activities are not limited to any particular type of student, there is wide variation in the intensity of implementation. There is not a consistent relationship between a district's ERG and the level of progress the district has made has made toward sustainability. On one hand, the surveys and site visits that Abt Associates conducted revealed that there are some schools that have STC systems with sustainable school-based activities, work-based activities, and connecting activities. On the other hand, there are institutions that report they are just beginning to assemble basic components of their systems.

Our analysis of survey data and site visit interviews suggests that STC Coordinators play particularly important roles in implementing STC systems and developing processes to sustain them. It would be difficult for an institution to implement a sustainable STC system without a coordinator or other dedicated staff with similar responsibilities.

Recommendations

Technical Assistance. In order for all schools to have sustainable STC systems, some institutions will require technical assistance and possibly additional funding. Throughout the state, it appears that there are several sources of technical assistance. In the surveys and site visits, several schools commented that the RESCs and SDE have been helpful in providing assistance as well as training. In addition, individual schools, including each of the four sites visited by Abt Associates, have provided assistance to other schools. Based on the barriers to implementation reported by grantees and the lowest-rated categories on the sustainability scale, it appears that the topics needing the most attention are classroom integration, release time for teachers to be involved in business and industry, and the establishment of broad career pathways that serve as a framework for delivering academic and vocational curricula.

Data Collection. Connecticut has developed an excellent database concerning the implementation of a variety of STC activities. The database primarily consists of survey data collected for this study, data from the national evaluation, and reports from monitoring site visits

to selected grantees. In addition, the RESCs are important sources of information because they maintain contact with local schools. The collection of accurate implementation data during 2001-02 and beyond will be important for determining the extent to which STC activities have been institutionalized by current grantees, and will be useful in guiding new grantees in developing and integrating school-to-career activities in their institutions.

Assessing the Impact of STC. Although there is information available regarding the STC systems that grantees have implemented, little information is available about the impact of these activities on students. Grantees perceive a wide range of benefits to students and their schools because of the STC systems they have developed. However, there is no evidence linking STC with student or school outcomes. State leaders may want to explore the relationship between STC activities that students have participated in and short-term outcomes such as attendance, grades, post-secondary plans, and performance on standardized tests. During the next year, student outcome data should be available through the national evaluation of STW. It might be possible to adapt the measures and methodology from the national evaluation to conduct similar research in Connecticut. Student impact data could be used for evaluation and continuous improvement of the state STC system, as well as for securing additional funds.

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A. General Findings

I. Introduction

During the past decade, there has been concern among policymakers, educators, business leaders, and the general public that students too frequently leave U.S. high schools ill-prepared for higher education or successful careers. Many students do not earn a high school diploma, which puts them at risk for becoming economically self-sufficient. Students who do complete high school may lack marketable skills, and many students are not aware of higher education and career options. Additionally, classroom instruction has been criticized for not being relevant to the world of work, even though a growing body of research suggests that contextually based learning can improve student motivation, attendance, and academic performance (Hughes, Bailey, and Mechur, 2001).

With this country's increasing attention on global competition, the growing demand for highly skilled workers, and the lack of well-paying jobs for unskilled workers, the preparation of young people for employment and higher education has become an issue important to our nation's economic success. While in the past the Federal government has funded work-related educational and training programs, these generally have been targeted toward specific populations of students and have not been available to all students. Passage of the School-to-Work Opportunities Act (P.L. 103-239) in 1994 provided new resources for States and local communities to build and enhance systems to better connect all students to the worlds of work and higher education.

The Act specified three core components of service:

- **School-based learning** focused on achieving high academic standards;
- **Work-based learning** leading to the attainment of workplace competencies; and
- **Connecting activities** to integrate school-based and work-based learning.

Rather than imposing a permanent, pre-designed program on States, the Act provided "seed money" grants over a five-year period to States and local communities to build and strengthen sustainable School-to-Work (STW) systems. States were given unusually broad discretion in designing and implementing their STW systems, with the major Federal requirement being that States had to include the three core components.

The types of Federal grant programs that were created under the Act included noncompetitive Development grants for States and Territories for use in planning STW systems and competitive State Implementation grants for states to establish STW systems. To date, all 50 states plus the District of Columbia and Puerto Rico have received each type of grant. Other STW funding

opportunities, including Local Partnership Grants, Urban/Rural Opportunities Grants, and Out-of-School Youth Grants also have been available.

With the receipt of the Federal-State Implementation grant in December 1996, Connecticut began its STW initiative, called School-to-Career (STC). Connecticut's STC system was designed to align with broader education improvement efforts by offering career pathways for students that are defined by academic, employability, and technical standards. After selecting a career pathway, students have the opportunity to earn the Connecticut Career Certificate (CCC), a portable credential that signifies student mastery of the academic, employability, and technical standards. The STC effort has addressed each of the Act's core components (school-based learning, work-based learning, and connecting activities) and has been targeted for all students, from elementary school through post-secondary education.

Research Design and Data Collection

The Connecticut State Department of Education, Bureau of Career & Adult Education, Division of Educational Programs and Services (also known as "CT Learns") contracted with Abt Associates Inc. in June 2000 to conduct a process evaluation of the state's STC initiative. The purposes of the evaluation were to:

- Document Connecticut's accomplishments in terms of the establishment of a state infrastructure to support STC;
- Provide an overview of the STC systems and activities implemented by local schools and their partners across the state;
- Describe the STC systems established by four schools that represent the diversity of STC grantees in terms of geography and institutional affiliation; and
- Make recommendations for sustaining and enhancing STC activities.

During the first year of the process evaluation, staff conducted the following data collection activities:

- Conduct of two surveys of institutions receiving State STC grants during the 2000-01 school year (see Appendices B and C for copies of the Mid Year and Final Report forms, respectively);
- Conduct of interviews with key STC participants, including state staff, state level partners, and regional partners;

- Review of relevant state documents;
- Review of national STW literature; and
- Visits to four schools to observe and assess STC implementation and interview key participants.

Organization of the Report

This document is Abt Associates' first-year report to the State Department of Education for the process evaluation. Described in the second chapter in this section are the design and implementation of Connecticut's STC system. The third chapter presents data on the level of implementation by local entities, and the final chapter in this section discusses the future of STC in Connecticut and presents recommendations for strengthening and sustaining the system. The second section of this report contains summaries of site visits to four Connecticut high schools.

II. Overview of Connecticut's School-to-Career System

State Legislation

Following passage of the Federal School-to-Work Opportunities Act, Connecticut's General Assembly passed and the Governor signed into law Public Act 94-116, "An Act Concerning Incentives and Training for High Performance Work Organizations and the School-to-Work Certificate Program." This 1994 statute outlined broad statewide goals for a STC system, calling for all students to obtain information about career development, focus on high academic standards, and participate in work-based opportunities.

Involvement of Key Partners

The State Department of Education's CT Learns Unit administers the State Implementation grant. Eight Learns Unit staff work on the STC initiative.

Connecticut's STC effort is structured on three levels – state, regional, and local. At the state level, several agencies and organizations have formed partnerships to guide STC activities. Partners at the state level are the Connecticut Employment and Training Commission (CETC), State Department of Education (SDE), the State Department of Labor, Regional Education Service Centers (RESC), Regional Workforce Development Boards (RWDB), community colleges (CC), the Connecticut Business and Industry Association (CBIA), the Department of Higher Education (DHE), Connecticut Department of Economic Development (DED), representatives from labor (AFL-CIO), Bureau of Rehabilitation Services, the Spanish-American Merchants Association, the Department of Children and Family Services, a local education agency representative, and representatives from vocational technical schools, adult education, and mentoring partnerships. Other statewide organizations, including the Connecticut Education Association, vocational teacher associations, Connecticut Association of Schools, and the Connecticut Association of Boards of Education, have been involved with promoting STC to their various constituencies.

The state is divided into eight regional partnerships. Each region has an appointed group of Tri-Conveners, consisting of the RESCS, RWDBs, and the CCs, which provide a variety of technical assistance and support to local schools. In addition, a SDE consultant is assigned to each region to serve as a liaison between the region and SDE, as well as to provide technical assistance as needed.

Partnerships at the local level involve school districts, vocational-technical schools, colleges, and universities, as well as businesses and other community partners. The education entities in the partnerships are eligible to receive state STC grants. Rather than issue grants to all of these institutions, SDE developed a competitive demonstration grant program to provide large, two-

year grants to selected sites. Fourteen institutions were funded as demonstration sites for the 1998-99 and 1999-2000 school years. The intent was for these sites to model the design and implementation of STC systems, so that they could share the lessons they learned with other sites. During the 2000-01 school year, 98 institutions received state STC grants. Currently, there are 118 school districts that have been approved to award the Connecticut Career Certificate (CCC), which represents about 70 percent of all Connecticut districts.

STC as a Standards-Driven Reform

In designing its system, Connecticut drew from the core elements outlined in the School-to-Work Opportunities Act. The Connecticut STC plan was designed to focus on all students and contained each of the three core components specified in the Federal legislation:

- School-based learning – with classroom instruction geared toward high academic and occupational skill standards;
- Work-based learning – including structured learning, training, and work experiences; and
- Connecting activities – to integrate the school-based and work-based components.

Since the inception of STC, most of Connecticut's focus has been on integrating these three core elements with the state's ongoing reform efforts. State, regional, and local partners have worked together to develop curricular frameworks for career majors (called "clusters") that are a combination of Connecticut's existing Curriculum Frameworks and the Connecticut Industry Skill Standards. Connecticut currently has eight career clusters[1]. Each cluster includes a wide range of occupations that share common requirements of skills and knowledge. The clusters are as follows:

- Arts and Media;
- Business and Finance;
- Construction: Technologies and Design;
- Environmental, Natural Resources, and Agriculture;
- Government, Education, and Human Services;
- Health and Biosciences;
- Retail, Tourism, Recreation, and Entrepreneurship; and
- Technologies: Manufacturing, Communications, and Repair.

Each Career Cluster has a framework that consists of three categories of standards – academic, technical, and employability – which are integrated with the Connecticut Curriculum

[1] Connecticut is adding a ninth cluster to focus on Information Technology.

Frameworks and the Connecticut Industry Skill Standards. A combination of standardized tests and performance-based assessments is used to measure student progress on each of these standards.

For School-to-Career **Academic Standards,** students can demonstrate mastery by meeting state-determined performance levels on any one of the following assessments:

- Connecticut Mastery Test (CMT), taken by all students in Grade 8;
- Connecticut Academic Performance Test (CAPT), taken by all students in Grade 10;
- Scholastic Assessment Test (SAT), taken on a voluntary basis; and
- Comprehensive Adult Student Assessment System (CASAS) (Levels C and D), taken on a voluntary basis by adult learners and out-of-school youth.

Connecticut also has developed School-to-Career **Employability Standards**, which were cross-referenced to the SCANS (U.S. Department of Labor's Secretary's Commission on Achieving Necessary Skills) skills. Employability skill standards have been integrated into each of the eight cluster curriculum frameworks and are assessed through both the student's workplace and classroom experiences.

Students demonstrate mastery of School-to-Career **Technical Skills** in two ways: (1) a performance-based assessment that relates to the student's workplace experience; and (2) in the future, a vocational-technical assessment that was piloted in the spring of 2000. Both performance-based and vocational-technical assessments are available for all eight clusters.

The same academic and employability standards apply to all career clusters, while the technical standards vary by cluster. Both the academic and employability standards are organized into major categories. Specific standards are detailed under each category. The categories for academic standards are Reading, Writing, Communication Skills, Mathematics, Sciences, and Computer Knowledge. The categories for the employability standards are Attitudes and Attributes, Customer Service, Teamwork, and Adaptability.

A Student Education and Career Record Evaluation (SECRE) Form was developed to help students, workplace monitors, guidance counselors, and other school staff track students' progress in demonstrating mastery of the academic and employability skills, as well as the technical skills pertaining to the cluster of the student's choice. The SECRE includes a large grid that lists all of the standards, and the guidance counselor/school staff or workplace monitors indicate the skills that students have demonstrated, and where (school and/or worksite) they have demonstrated them. In addition to the SECRE, tools such as portfolios are used frequently to record student achievements.

Training and Technical Assistance

SDE and other key partners have provided technical assistance, professional development, and other resources to facilitate the planning and implementation of STC systems. Listed below are some of the activities that STC partners have undertaken.

Professional Development. A Statewide Professional Development Committee was formed to assist in providing STC-related professional development opportunities. The committee has developed a comprehensive statewide plan to offer training applicable to teachers, counselors, and administrators planning or implementing STC. Examples include annual Summer Institutes, which highlight best practices and provide district teams an opportunity to exchange strategies with other partnerships and engage in planning activities, as well as Sustainability Institute workshops for district teams to work with national experts to develop sustainability plans. To date, nearly 200 professional development sessions have been offered across the state for educators and business/community partners. An estimated 825 individuals participated during the 1999-2000 school year. The 2000 Summer Institute drew more than 500 participants, an increase from the 1999 Institute, which drew 385. The 2000 Sustainability Institutes were attended by 125 individuals.

Technical Assistance. STC partners have undertaken a variety of activities in program review, product development, and information dissemination to support the implementation of STC in local schools. Presented below are examples of technical assistance activities and products that have been provided by statewide STC partners.

- SDE and the Regional Tri-Conveners monitor and review local STC partnerships. Program Reviews are conducted by a review team that is led by an SDE staff person. Twenty-two Program Review site visits were conducted in 1999-2000 and 29 were conducted in 2000-01. Reviews are intended to assess the school's progress in developing sustainable STC systems of school-based, work-based, and connecting activities. Following the review, the Superintendent and STC Coordinator receive the team's report, which includes recommendations to strengthen the system and commendations that recognize areas of accomplishment. The school is required to respond to the recommended actions;

- Career cluster videos were created in partnership with CBIA to highlight career and education options associated with each career cluster. An introductory video also was developed, and copies of all the videos were given to all middle schools, high schools, and institutions of higher education in Connecticut, along with posters, teacher guides, and other materials;

- CBIA has delivered presentations to employers, employer associations (e.g., chambers of commerce), and labor organizations to promote partnerships with school districts and post-secondary institutions. Additionally, Employer Incentive Grants were created by SDE and CBIA and awarded to dozens of local business partnerships to mobilize the memberships of business organizations to participate in local STC activities;

- An STC Employer Pocket Guide, developed in partnership with CBIA, is a business recruitment tool that outlines the different ways that businesses can become involved with schools;

- The Students with Disabilities Committee provides guidance to state, regional, and local partners regarding providing STC opportunities for all students;

- Quarterly Statewide Meetings are organized by SDEs, Tri-Conveners, and local partners to network and share information;

- SDE has developed promotional brochures for businesses, educators, parents, and students. Guides have been developed for Teachers and Parents/Students that explain the philosophy of the STC system, the career cluster options, and the Connecticut Career Certificate;

- The State Department of Labor, Workforce Development Boards, and CBIA provide assistance to employers and school districts in the form of labor market information and employability skills; and

- A statewide work-based conference was organized by community colleges and the Connecticut Department of Higher Education for all education and business providers. The community college system has also held workshops to enhance Tech Prep offerings.

Graduation Requirements

In Connecticut, graduation requirements consist of: (1) a number of core credits as determined by the state, and (2) additional requirements identified by local school boards. The state's core requirements have not been altered to include STC components, such as a work-related experience or the completion of a career cluster. However, at the district level, some of the 169 local boards have revised their requirements to include STC components such as portfolio development, career development classes, computer skills classes, and internship classes. Data are not available to determine exactly how many school boards have revised graduation requirements.

Sustainability Efforts

In 2000-01, a Sustainability Institute was held for district teams consisting of administrators, STC Coordinators, curriculum directors, and teachers. The three-day Institute, which occurred over a two-month period, provided resources and planning time for teams to consider the major goals of their STC effort. Institute participants identified the elements of their systems that need to be sustained and the resources required for sustaining them. Members of STC partnerships from Connecticut and other states worked with district teams to explain how they have sustained STC activities. As a result of the Institute, several workshops focusing on sustainability are being held during the 2001-02 school year, and a Sustainability Planning Guide was developed and distributed to districts across the state.

III. Profile of School-to-Career in Connecticut: Summary of Data

This section presents the data that Abt Associates and SDE collected to address key questions concerning three aspects of Connecticut's STC system: implementation of STC components, student participation, and sustainability. The primary instruments used to collect data were a Midyear survey of STC grantees that was administered in January 2001 and a Final Year survey that was conducted in June 2001 to the same grantees. Both were conducted by Abt Associates in conjunction with SDE. A total of 87 out of 98 institutions (89 percent response rate) receiving state STC grants responded to the Final Year survey. The institutions that responded included comprehensive high schools, comprehensive school districts, vocational-technical schools, vocational-agricultural schools, adult education providers, magnet schools, and community colleges and universities. All of the data presented in this section come from the Final Year survey, unless otherwise noted. Institutions receiving grants are referred to as grantees.

In order to examine Connecticut's STC system in a larger context, data are presented from the most recent National School-to-Work Progress Measures Survey that compares Connecticut with other states. These data were collected during the 1999-2000 school year as part of the National Evaluation of School-to-Work conducted by Mathematica Policy Research Inc., MPR Associates Inc., and Decision Information Resources.

Implementation of STC

In examining the implementation of the STC components established by grantees, we considered the following:

- The target population for STC;
- Development of career clusters;
- Role of STC Coordinators;
- Development of Career Centers; and
- Development of business and community partnerships.

The data we analyzed for each of these topics are discussed below.

STC for All Students. A key component of the statewide STC design has been its emphasis on serving all students. While some states or local districts across the country have focused their school-to-work activities on students who are not bound for four-year colleges, Connecticut has

consistently directed its efforts toward all students, regardless of their ability or education/career plans[2]. Since STC grantees have been given considerable flexibility in how they develop their STC systems, institutions that received state STC grants were asked to specify whether they had targeted any particular group or type of student. All of the grantees reported that they had developed and implemented their STC systems for all students. However, many commented that since participation in STC activities is largely voluntary, students' involvement in activities varies.

Targeted Career Clusters. As described in Section II, the major focus of Connecticut's effort has been to integrate STC components with the state's ongoing reform efforts. This was accomplished through the development of eight career clusters and accompanying curricular frameworks, which were designed to be a combination of the existing Connecticut Curriculum Frameworks and the Connecticut Industry Skill Standards.

Schools are not mandated to implement the clusters, although they are encouraged to implement as many as possible and are offered technical assistance from state and regional partners to help them do so. Similarly, while high school students are encouraged to select a cluster, whether or not they are required to do so varies by school. Each of the eight career clusters has been implemented by between 61 and 85 percent of grantees. As shown in Exhibit 1, the most commonly targeted clusters were "Technology, Manufacturing, Communications & Repair," "Business and Finance," "Health & Biosciences," and "Retail, Tourism, Recreation and Entrepreneurship." Half of the grantees reported that they offered all eight clusters (see Exhibit 2).

Exhibit 1: Frequency and Percent of Grantees that Have Implemented Career Clusters

Career Clusters	Frequency	Percent
Arts & Media	67	77.0
Business & Finance	72	82.8
Construction: Technologies & Design	65	74.7
Environmental, Natural Resources and Agriculture	53	60.9
Government, Education, and Human Services	65	74.7
Health & Biosciences	71	81.6
Retail, Tourism, Recreation and Entrepreneurship	70	80.5
Technology, Manufacturing, Communications & Repair	74	85.1

[2] Although there are limited data nationally on the impacts of STC on students and whether it has greater benefit for students that are non-college-bound, a growing body of research conducted across the country does suggest that participation in STC activities tends to have positive effects on students regardless of their post-secondary plans (Hughes, Bailey, and Mechur, 2001).

Exhibit 2: Number of Career Clusters Implemented by Grantees

Number of Career Clusters	Frequency	Percent
Zero	2	2.3
One	3	3.4
Two	1	1.1
Three	6	6.9
Four	11	12.6
Five	7	8.0
Six	8	9.2
Seven	5	5.7
All Eight	44	50.6

Grantees also were asked to report on the number of students participating in various STC-related activities. As shown later in this section, they reported that about one-third (32 percent) of all high school students had selected a career cluster by the end of the 2000-01 school year. This figure represents a first-year baseline against which future years data can be compared.

Partnerships with Businesses and Community Based Organizations. Connecticut's multi-layered (state-regional-local) approach to designing and implementing its STC initiative has placed a heavy emphasis on the formation of partnerships at each level, particularly the local level. The statewide business partner, CBIA, has promoted STC linkages with schools and has made several presentations to individual businesses and local business associations. At the local level, many grantees report that school board members, administrators, parents, and school STC Coordinators have been active in helping forming partnerships with businesses and community based-organizations (CBOs).

Abt Associates' survey of grantees requested information on the number of partnerships each institution had formed with businesses and CBOs. As of June 2001, grantees reported a total of 7,677 partnerships to support STC activities – 6,552 with businesses and 1,125 with CBOs. The average number of business partnerships was 82 and the average number of CBO partnerships was 16. The number of business partnerships per grantee ranged from 7 to 295. The number of partnerships with CBOs ranged from 0 to 129. These figures are based on responses from 80 out of a possible 98 grantees, so the actual number of partnerships in the state is likely higher.

The nature of the school-business/CBO partnerships vary; some of the partnerships involve one activity, while others involve multiple activities. Exhibit 3 presents a list of common STC activities and the frequency and percent of partnerships that were engaged in the activity. Half of the 7,677 partnerships involved job shadowing, which was the most common activity. The next most frequent activities were career fairs, classroom activities, internships, and field trips.

Exhibit 3: Focus of Business/CBO Partnerships

Total numbers of school-businesses/CBO partnerships that involved:	School-Business/CBO Partnerships	
	Number	Percent (n = 7,677)
• Participating in job shadowing	3,847	50.1
• Participating in career fairs or similar activities	2,913	37.9
• Participating in classroom activities as guest speakers or presenters	2,385	31.1
• Providing internships for students	1,925	25.1
• Hosting field trips	1,565	20.4
• Providing input or advice regarding curriculum	910	11.9
• Providing externships for teachers	475	6.2
• Providing supplies or materials	414	5.4
• Providing funding to support STC activities	378	4.9
• Providing support for transportation	154	2.0

Another important activity that promotes relationships between schools and businesses is the establishment of a business advisory board. An advisory board or a committee is a mechanism to facilitate interaction among local business and community leaders to discuss topics such as industry skill standards, the infusion of career awareness and workplace activities in curriculum, fundraising, and recruitment of other business and community partners. Eighty-nine percent of grantees have a business advisory board or another mechanism to obtain business/community involvement on STC activities. In most cases, grantees have a business advisory board (75 percent), while some (14 percent) use other means to obtain business involvement, such as regularly attending and presenting at Chambers of Commerce meetings or conducting surveys of area businesses. Eleven percent of the grantees reported that they do not have an organized way of getting business involvement.

School-to-Career Coordinators. STC Coordinators can play a wide variety of important roles, including:

- Promoting curriculum revision and the implementation of career clusters;
- Promoting STC concepts to administrators and teachers;
- Promoting STC opportunities to the student body;
- Developing STC activities such as career fairs and guest speakers;

- Serving as a point of contact for getting business/CBO involvement;
- Arranging linkages with higher education institutions or with school districts;
- Arranging and monitoring internships and job shadows;
- Developing and staffing career centers;
- Fundraising; and
- Managing STC-related grants.

In larger districts, these functions may be carried out by more than one person (e.g., one internship coordinator, one business recruiter, etc.). However, in smaller districts they are often the responsibility of one person. Of the grantees that have a STC Coordinator, 33 percent reported that STC is the coordinator's only job responsibility, while the other 67 percent reported that the coordinator has other responsibilities.

Nearly all of the grantees (94 percent) reported that they have an STC Coordinator. However, only half of the coordinators are full-time, the other half are part-time. Of the grantees that have a STC Coordinator, 50 percent are supported solely by the school's budget, 39 percent are supported by a combination of school budget and other (e.g., grant) funds, and 11 percent are supported solely by other (e.g., grant) funds.

One of the conclusions drawn from analysis of survey results and site visits is that STC Coordinators play a pivotal role in organizing activities, monitoring their progress, and facilitating communication among various key stakeholders involved in STC activities. Although few in number, the schools that do not have coordinators or support them solely with grant funds appear to be less well-positioned to develop sustainable STC systems.

Career Centers. Career centers can be useful resources for students, teachers, and the general public, providing resources such as higher education information and applications, career interest instruments, career awareness materials, job search materials and assistance, internship opportunities, and more. Ninety-two percent of the school districts and vocational technical schools reported that their high school(s) had at least one career center. Some reported more than one career center. An examination of the grantees (including community colleges, adult education providers, etc. as well as school districts and vocational-technical institutions) reveals that overall, 89 percent have at least one career center.

More than half (51 percent) of the career centers reported in the survey were established in 1997 or later, which is when the state STC grant program started. This suggests that state funds were helpful in establishing the centers, although they require an ongoing funding commitment to

refurbish resources and staff (if applicable). Eighty-eight percent of the career centers have at least one staff person that is assigned to the center. Most of the centers operate during normal school hours, but are occasionally available before or after school hours either by appointment or on specified days of the week.

Elementary/Middle School Activities. The vast majority (92 percent) of the school districts reported having a career component taught at the elementary and/or middle school levels in addition to high school. Of the districts with a career component in the middle or elementary levels, 100 percent reported that the career component involves career awareness activities and/or exploration, and 74 percent reported that the middle/elementary school component has a curriculum.

Student Participation

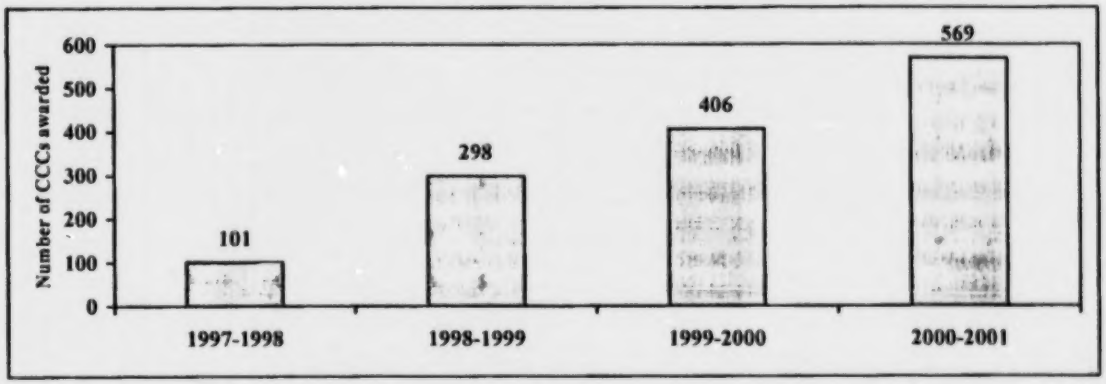
Students have been provided a variety of options for developing their knowledge, skills, and experience related to world of work through STC. The various programs and activities in which students have participated are described in this section.

Tech Prep. Tech Prep is an important component of the STC system. Tech Prep combines two years of high school and two years of college and is designed to prepare high school students with technical information that they can use in higher education. The Tech Prep experience includes academic and vocational coursework, career awareness and planning, and work-based experiences. Secondary schools develop articulation agreements with post-secondary institutions that allow participating students to take college-level classes and receive college credits. Tech Prep participation has increased in recent years, from 4,182 in 1999-2000 to 4,629 in 2000-01.

Connecticut Career Certificate. Attaining the CCC is the ultimate accomplishment in the STC system. It indicates that a student has met all of the core academic and employability standards, and also has achieved the technical standards pertaining to the career cluster of his/her choice.

As Exhibit 4 shows, 569 students were awarded the CCC in 2001. Although the number has grown steadily each year since the first certificates were awarded in 1998, it remains a small percentage of the student body. (For example, in the fall of 2000 there were 32,592 students enrolled in grade 12 in public schools.) In 2001, certificates were awarded to students from each of the eight clusters, with the largest number in the "Retail, Tourism, Recreation and Entrepreneurship" cluster (18 percent of Certificates), and the lowest number in the "Construction: Technologies & Design" cluster (6 percent).

Exhibit 4: Number of CCCs Awarded, 1997-98 – 2000-01



Student Participation in Selected STC Activities. Grantees were asked to report the total number of students participating in various STC activities, by grade level, for the 2000-01 school year. These data are presented in Exhibit 5.

Exhibit 5: Numbers of Students Participating in STC Activities During the 2000-01 School Year

STC Activities	Grade Level		
	K-5	6-8	9-12
Number of students that have selected a career cluster by the end of the 2000-01 school year			21,318
Number of students participating in job shadowing	601	1,519	9,861
Number of students participating in internships			2,230
Number of students participating in portfolio development	2,631	15,565	38,007
Number of students participating in a career interest survey	2,061	19,221	42,215
Number of students participating in career counseling	5,708	18,538	51,056

Seventy-seven (out of 98) grantees were able to respond to this question, and some of the 77 grantees were only able to provide data for certain activities and/or for certain grade levels. Because of the unevenness of reporting, the percents reported below were calculated for each grade level/activity using only the enrollment data from those districts able to specify data. Using total enrollment by grade level, the following are estimated percentages of students participating in the various STC activities:

- Career Counseling: High school students (72 percent), middle school students (62 percent), and elementary school students (29 percent);

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- Portfolio Development: High school students (50 percent), middle school students (50 percent), and elementary school students (11 percent);

- Career Interest Survey: High school students (50 percent), middle school students (50 percent), and elementary school students (11 percent);

- Completion of Job Shadow: High school students (12 percent), middle school students (7 percent), and elementary school students (3 percent);

- Selection of a Career Cluster: High school students (32 percent); and

- Participation in an Internship: High school students (3 percent).

National Comparisons. Through their respective RESCs, schools in Connecticut participated in the National School-to-Work Evaluation. The data collected in the national evaluation allow comparisons between Connecticut and national averages. The most recent data are from the 1999-2000 school year, which is the last year that data were collected.

Exhibit 6 presents a summary of data related to student activities and the availability of those activities at students' schools. On measures relating to schools' availability of STC activities for students, Connecticut tends to score higher than national averages. On measures regarding actual student participation in those activities, Connecticut tends to score at or slightly below national averages.

Exhibit 6: National Progress Measures Data Summary – Measures Relating to STC Activities, 1999-2000 School Year

	National Data		Connecticut	
	Number	Percent	Number	Percent
Job Shadowing				
Schools offering job shadowing	7,769	76	107	89
Student participation in job shadowing	769,204	10	8,744	8
Work-based Mentoring				
Schools offering work-based mentoring	4,477	44	61	51
Student participation in work-based mentoring	271,466	3	2,755	3
Internships				
Schools offering student internships	4,688	46	86	72
Student participation in internships	236,987	3	2,499	2
Cooperative Education				
Schools offering cooperative education	5,534	54	44	37
Student participation in cooperative education	288,388	4	2,132	2
School-based Enterprise / Community Service / Service Learning				
Schools offering school-based enterprises / community service / service learning	5,623	55	62	52
Student participation in school-based enterprises / community service / service learning	880,174	11	8,388	8

Source: MPR Associates, Inc.

The national evaluation also included items related to curriculum, and this comparison between Connecticut and national averages follows the same pattern. On measures concerning the percent of schools offering STC-influenced curriculum, Connecticut scores higher than national averages. On measures relating to the percents of students participating in these curricula, Connecticut tends to score at or slightly below national averages. These data are presented in Exhibit 7.

Exhibit 7: National Progress Measures Data Summary – Measures Relating to Curriculum, 1999-2000 School Year

	National Data		Connecticut	
	Number	Percent	Number	Percent
Work-related Curriculum				
Schools offering curriculum with references to the world of work	8,335	81	111	93
Students participating in curriculum with references to the world of work	3,827,816	47	48,247	46
Integrated Academic and Work-related Curriculum				
Schools offering curriculum with academic and work-related career preparation	7,121	69	89	74
Students participating in curriculum with academic and work-related career preparation	2,918,137	36	30,977	30
Work-based Learning Connected to an Integrated Curriculum				
Schools offering work-based learning connected to an integrated curriculum	6,203	60	95	80
Students participating in work-based learning connected to an integrated curriculum	1,040,635	13	10,905	10

Source: MPR Associates, Inc.

Perceptions of Sustainability, Impact on Students/Schools, and Barriers to Implementation

In examining grantees' perceptions of STC sustainability, we considered the following:

- The overall level of implementation of STC;
- Specific areas of progress and areas not yet addressed;

- Perceived impacts on students and schools as a whole as a result of STC; and

- Barriers to implementing STC.

Perceptions of Sustainability. A short STC sustainability measure was adapted from the *School-to-Work Self-Assessment Template* developed by the Institute for Workforce Competitiveness at Florida International University (Haley, 1998). Grantees were asked to rate their institution's level of progress on some of the key measures that are important for sustainability. Included were statements regarding:

- The involvement and support of various partners, including school board members, business leaders, and community college and university leaders;

- The support of school/governing board policies for STC;

- The development of a realistic vision for STC by partners;

- The integration of workplace competencies with academic content standards, curriculum and instruction, and assessment practices;

- The integration of career awareness, exploration, and preparation in instruction;

- The availability of work-based learning opportunities for students;

- The integration of STC in classroom instruction;

- The availability of release time for teachers, counselors, and other staff to be involved with business and industry;

- The availability of professional development for teachers, counselors, and other staff;

- The presence of broad career pathways as frameworks for delivering academic and vocational curricula; and

- The coordination of work-based learning activities into a single point of contact for employer communication.

Grantees used a four-point scale to rate their progress in each of these areas, with '1' indicating that there was no activity/progress, '2' indicating that things were in the beginning planning stages, '3' indicating that things were in progress and there was moderate activity, and '4' indicating that their was heavy activity or it was operational. As shown in Appendix A, grantees generally rated themselves highly with scores of '3' and '4' in these measures. Few grantees

reported no activities had been undertaken in one of the areas listed above, although a small number reported being in the early planning stages for some activities.

Grantees perceived their institutions as having made the strongest progress in the following:

- The support of school/governing board and other key community players as evidenced by school board policies and the participation of key school/business/community leaders;
- The availability of STC-related professional development;
- Coordination of STC activities through a single point of contact; and
- The availability of STC activities for students.

The areas that are still evolving or not as likely to be implemented included:

- The availability of release time for teachers and other staff;
- The integration of STC in classroom instruction; and
- The availability of broad career pathways for students.

Other measures were rated as being somewhere in between these two groups. The measures included in the "strongest progress" list are activities that need to be implemented before more substantial changes can take place. For instance, board members need to support the school's STC plan before any action is taken, and business/community leaders need to be mobilized to help design and implement activities for students and/or become involved with curriculum or classroom activities. Also, prior to the passage of Federal and state STC legislation, many districts probably provided some level of career awareness or workplace opportunities for students, so these activities could be enhanced and supplemented rather than needing to be created. Finally, state and regional partners have worked to provide a wide variety of professional development opportunities related to STC, and the prevalence of these activities is reflected in the second bullet.

The activities that are "still evolving" list are key measures of institutionalization. Schools have made some progress in these areas, but these activities generally take longer to implement and would not have begun until some of the more basic components were in place. The lack of release time to support activities like teacher externships also is listed as one of grantees' barriers to implementation.

Perceptions of Barriers/Challenges to Implementing STC. Grantees were asked to list the goals and objectives of their 2000-01 state STC grant and to describe any challenges or barriers

that could prevent them from being carried out. Sixty-one percent of respondents reported at least one challenge/barrier. The most frequently cited responses were the following:

- Staffing – the need to increase the number and/or time commitment of staff working on STC issues given the many responsibilities of STC Coordinators and related staff;
- Transportation – the lack of transportation for students to get to and from work-site experiences (noted most frequently by rural school districts);
- Teacher support – some teachers' lack of interest in STC, or their resistance to it; and
- Release time – the lack of available release time for teacher externships or other professional development during the school year.

Perceptions of Impact on Students. Grantees were asked to provide examples of how STC has impacted students directly. Some responded by providing specific stories about how individual students' lives have been changed, while others spoke in more general terms. Responses were coded into broad categories. Following are the most common response categories, in order of frequency:

- Students have gained work experience in area/s of interest;
- Students are better prepared to make career and higher education decisions;
- Students have a stronger base of skills or are more employable;
- Students have a better understanding of workplace expectations;
- Students have received an increased exposure to 'authentic' learning in school;
- Students have gained employment after graduation;
- Students have stronger motivation in school; and
- Students are now more likely to go on to higher education.

Exhibit 8 presents a sample of responses to this question.

Exhibit 8: Selected Responses – How Has STC Made a Difference for Students?

"Yes, our profile information indicates that we now have 72% of our students attending 4-year colleges, up from 58% in 1995. We believe it is the direct result of school philosophies (performance-based curriculum), developmental guidance programs, and STC initiatives. We also have had students who have participated in our Graphic Arts Enterprise pilot. These students have learned about running a business through bookkeeping, salesmanship, and graphic arts."

"We conducted a Job Shadowing event with the City of New London Mayor's office. We titled the program, "Youth in City Government" and rotated students from the Career Assessment class through the various offices in city government. Students participated in Job Shadows at the police department, fire dept, finance dept, city manager's office, board of education, health department, public works, and planning dept. The program was split into two 6-week segments and was very successful. Upon completion of the program, the mayor presented certificates to the students at a City Council meeting. Parents were invited and attended along with their families. School-Community relations were definitely strengthened and plans were immediately put in place for a similar program next year."

"At least five students have received full-time employment upon graduation as a result of their paid internships."

"[Program] is an alternative education program with students attending a work placement during the day and going to school in the late afternoon. This program has eliminated the dropout rate at [the high school]. It has also provided valuable employment links and learning for students who need job acquisition skills."

"Improvements in overall student attendance the last three years. Improvements in standardized test scores. Students [are] more focused, self-directed and career oriented. Students [are] more sophisticated with regard to interviews and resume production. Students [are] more leadership oriented. Students [are] more knowledgeable regarding world of work."

"Career Awareness programs are making children excited about 'work' and its relation to their every day habits. A project with Southwest Airlines for bilingual students produced a number of students who now have plans to be more than just flight attendants. Their writings have evidenced a level of goal setting that is encouraging because it speaks to higher goals and skills than usual for these students"

"Guidance counselors report that students who have job shadowed are more and better prepared to take a more active role in their post-secondary school planning. They have a better idea of what they want and do not want."

"[A high school student] has participated in a two-year medical internship as well as attending a summer health careers program last year. She spent her senior year working as an intern at the Emergency Dept at Waterbury Hospital through Education Connection's Regional Internship program. She was recognized as a student of the month through the Rotary Club. [She] does not test well and scored low on the SATs. She was accepted into UConn for Fall 2001 and feels her participation in STC activities was a significant factor in her acceptance."

"[A high school student] is working as an intern at Merrill Lynch after receiving the offer [through] participating in Career Exploration Day. This student is extremely interested in a career in finance. Next year, he will take a course in finance and the stock market offered for the first time at [the high school]. [Another high school student] is pursuing a career in law enforcement at Southern Connecticut State University after completing a police job shadow and an internship with a parole officer."

**Exhibit 8 (Continued): Selected Responses –
How Has STC Made a Difference for Students?**

"By having all grade 11 students complete the various components of the CHOICES software, the district has found that students have better direction for their future. This process allows the students to examine possible careers that maybe they never knew existed or that maybe they never knew they were qualified for. The college search component assists students in a custom tailored search, enabling them to query schools that offer specific majors and programs, which will hopefully decrease the possibility of a college transfer, because a school didn't have the offerings that the student was seeking."

"School enterprises have provided students with a hands-on learning opportunity to apply their classroom learning to practical experience. The culinary students 'cater' many school events and take these opportunities seriously. Everything is done professionally right down to wearing their 'chef uniforms' at these occasions. The school store has provided students with the opportunity to learn management and customer service skills, as well as all facets of the operation of a retail store. Students were given the responsibilities of ordering merchandise, setting up the displays, advertising products, etc. Many students donated hours of their own time to repaint the store. The Advanced Graphics students have been asked by many 'customers' to print everything from school stationary to posters advertising community events. Their products reflect a professional flair. Many of these students find part-time employment in printing companies and often choose to pursue post-secondary education in the graphics area. Auto Technology class provides basic maintenance (free of charge) to students and staff endowing these students with valuable hands-on experience."

"Student exposure to Three Rivers CC and post-secondary options have opened doors and minds to students and families that had previously thought that 'college is not for me.'"

"A senior intern spent sixty hours with a physical therapy practice thinking that this was her chosen career path. After this experience she decided that it was not appropriate for her and chose an alternative. This student (and her parents!) praise the internship program for allowing her this experience during high school, so that precious time and money would not be spent pursuing the Physical Therapy field during her college years."

"[For the vocational-technical students] who participated in our job shadow opportunities, many of them come back more focused towards their specific trade area. In some cases, the opportunity to network with employers out in the field ahs lead to contacts for Cooperative Work Experience (CWE) placement. This year in particular, two junior electrical students were placed for CWE with the business they shadowed with as sophomores."

"In the Electrathon Series, students work year long in teams to build electric cars and participate in the state wide race in June. We have built the program up this year and 19 students participated. The success is that all students are from different 'groups' in school and would never come together but in this project, they have bonded and worked together and became state champs together. They say it has changed their lives! They are hosting a thank you reception for community members and business people who contributed in time and monetary contributions throughout the year. The students really appreciate the time the adults have given to them as they have been helped by welders, engineers and teachers of all subjects in the program."

"One Allied Health student, before entering the program junior year, was at the point of dropping out, very disruptive, admittedly not interested in school at all. Once she got into the clinical portion of the program at a local hospital, her attendance and behavior turned around completely. She graduated, as a Certified Nurse's Assistant, and was hired by the hospital and has patients she privately cares for and loves her work."

Perceptions of Impact on Schools. Grantees were asked to provide examples of how STC has had an impact beyond the student population, on schools in general. Responses were coded into broad categories. Following are the most common response categories, in order of frequency:

- Schools have stronger relationships with businesses/community in general;
- Additional teacher training has been available;
- Curriculum has been revised;
- Changes have been made to teaching methods and classroom activities;
- There has been greater collaboration within schools (between departments and/or teachers);
- Schools have stronger relationships with parents; and
- Schools are in a better position to obtain funding, donations of equipment and materials.

Exhibit 9 presents a small selection of responses to this question.

Exhibit 9: Selected Responses –
How Has STC Made a Difference Beyond the Student Population?

"In the past 6 years our school/community relationship has grown from practically nothing to an amazing number of businesses and individuals who are committed to work with us to further the STC movement."

"Career awareness is now included in all [district] curriculum frameworks."

"Because of presence of STC programs on our campus, the faculty and curriculum designers are listening more closely to the specific needs of the business communities. Because of presence of STC programs on our campus, the college has been in a better place for applying for grants that will allow [the college] to offer a wider variety of career exploration experiences. Because of presence of STC programs on our campus, there is a renewed enthusiasm on the part of faculty for their own disciplines."

"Teachers participating in the teacher externship program have had valuable experiences and they have brought back their new knowledge to the classroom through lesson plans. In addition, they now have a new understanding of the soft skills that we are developing in school which are required in the workplace."

"After purchasing equipment to develop a graphic arts curriculum within our computer curriculum, we connected with SNET. This connection has proved to be very productive for both parties. SNET will provide externships, field trips and a wealth of speakers. They are also interested in having their employees come in to the school to see how and what the students are learning."

Exhibit 9 (Continued): Selected Responses –
How Has STC Made a Difference Beyond the Student Population?

"Career days are taking place in all elementary schools."

"Teachers have participated in site visits to many companies including – UConn medical center, a forensics lab, Fox 61, Funnybones, machining and manufacturing companies, etc. Through these types of professional development activities teachers have modified curriculum, made educational material/equipment purchases and changed their methodology towards instruction (Project based assessment, examining processes and ability to work in teams, etc.)"

"The School To Career initiative has been the point of entry for school reform in [the school district] through our performance based instructional initiative with its required School To Career linkages and the classroom lessons conducted by the Career Center staff. We have made School To Career a sustainable part of the student experience."

"Through our Career Center Business Advisory Boards, teachers are communicating directly with businesses regarding industry standards and curriculum. Bridges between the schools and community continue to strengthen and grow. More business and community organizations look to the Career Center for internships."

"One of our art teachers originally thought that STC had nothing to do with art. After performing an externship last summer (2000) through CBIA, she is completely sold on the value of STC in her courses. She now seeks out artists who are making a living with their work, and does job shadows, workshops, and externships on a regular basis in order to bring new techniques, skills and perspective to her students."

"Yes, the community has come together with the Action Team made up of businesses, community leaders and teachers and administrators from each school. The clubs such as Rotary Club, Lions Club, YMCA and Chamber of Commerce are including STC in much of their agendas. The community service component in our district which is part of STC affects all members in our town from children up through senior citizens and the Town Council is very impressed and also hosts STC programs. STC has offered teachers and other schools a way to connect and come together. It has been a great way to improve relations in all areas: business, education, politics, and service clubs."

"The STC initiative has made a big impact on the parents and the community at large. The STC Coordinator attends at least one parent meeting at each school every year to explain the STC activities to parents. The parents are extremely supportive, volunteering to participate, providing funds, etc. In some instances, it has been the parents who have brought the STC activities initially to the school."

"Stronger relationships with many businesses have been as a result of STC internships. Business members of Advisory Committee have afforded many benefits to students and programs from equipment donations to internship and job opportunities for students."

"Strong improvement in teachers and curriculum. This year all [high school] staff worked to integrate work skills into their classes. This spring 80% of [the high school] staff is working on new curriculum, based on 'Performance Task' model that will further integrate CT career strands, SCANS competencies and CT Core standards into every lesson. This curriculum development project was funded by STC, and workshop/mentor recommended by our Region A director."

Summary

Analysis of the data on the three aspects of Connecticut's STC system indicate that, as a whole, grantees have embraced each of the three pillars of STC identified in both the national and state legislation: school-based learning, work-based learning, and connecting activities. Grantees have designed their systems to focus on all students, and not only on students of certain abilities or aspirations. High percentages of grantees have fundamental STC components in place; however, there is considerable variation among grantees in the intensity of STC implementation[3]. Students at all grade levels are participating in STC activities, but only a small fraction of students are participating in intensive experiences such as internships. Data from the national evaluation suggest that the level of student participation is roughly the same as national averages.

These results suggest that the level of implementation of STC activities and the progress toward sustainability have contributed to a strong foundation for STC in the state. A vast majority of grantees have been able to establish the fundamental components that are vital for further implementation and long-term sustainability. The data from the surveys, site visits[4], and our conversations with state, regional, and local partners also indicate that there are several grantees that have successfully woven STC systems into the fabric of their schools. They can serve as models or as providers of technical assistance to the grantees that are not as advanced or to the schools that have not yet received state funding.

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[3] One question raised about the level of implementation and prospects for sustainability has been whether or not factors such as poverty would play a role in a school's ability to implement STC. Connecticut's Education Reference Group (ERG) is a classification system that categorizes school districts according to a variety of socio-economic data including income, education, poverty, family structure, occupation, home language, and district enrollment size. Districts are assigned to nine ERG categories, A (highest income) through I (lowest income). We used the ERG classifications of survey respondents to assign them into one of three ERG groups, A-B-C, D-E-F, and G-H-I, and analyzed the responses to key questions related to implementation and sustainability. While there were some differences across ERG categories, no consistent patterns were evident, suggesting that factors other than a district's ERG play a more significant role in a district's level of STC implementation and sustainability.

[4] Summary descriptions of the STC systems in the four institutions that participated in the site visits are presented in Section B.

IV. Conclusions and Recommendations

STC is an instructional system that both supports and is aligned with broader school improvement initiatives. A STC system consists of three pillars: school-based learning (skills taught in classroom, career awareness, relevancy to the real world); work-based activities (internships and job shadows in careers that interest the student); and connecting activities (mechanisms linking school-based learning with work-based experiences).

Conclusions

Connecticut's multi-layered, state-regional-local approach has been successful in helping local schools design and implement STC systems. There is a large and diverse body of state, regional, and local organizations that have been active in providing technical assistance and other resources to local schools in support of STC. Of the schools that received state STC grant support during 2000-01, high percentages have undertaken or are currently implementing the fundamental components of STC systems such as skills-based curricula, work-based experiences, professional development for educators, career awareness and planning, and resources to support those activities (STC Coordinator, business/community partners, career centers, etc.). An important element of Connecticut's statewide plan has been that STC systems should be available for ail students. All of the surveyed grantees reported that their systems are aimed at all students.

While every grantee has at least some of these components in place and STC activities are not limited to any particular type of student, there is wide variation in the intensity of implementation. There is not a consistent relationship between a district's ERG and the level of progress the district has made has made toward sustainability. On one hand, the surveys and site visits that Abt Associates conducted revealed that there are some schools that have STC systems with sustainable school-based activities, work-based activities, and connecting activities. On the other hand, there are institutions that report they are just beginning to assemble basic components of their systems.

Our analysis of survey data and site visit interviews suggests that STC Coordinators play particularly important roles in implementing STC systems and developing processes to sustain them. It would be difficult for an institution to implement a sustainable STC system without a coordinator or other dedicated staff with similar responsibilities.

Recommendations

Technical Assistance. In order for all schools to have sustainable STC systems, some institutions will require technical assistance and possibly additional funding. Throughout the state, it appears that there are several sources of technical assistance. In the surveys and site

visits, several schools commented that the RESCs and SDE have been helpful in providing assistance as well as training. In addition, individual schools, including each of the four sites visited by Abt Associates, have provided assistance to other schools. Based on the barriers to implementation reported by grantees and the lowest-rated categories on the sustainability scale, it appears that the topics needing the most attention are classroom integration, release time for teachers to be involved in business and industry, and the establishment of broad career pathways that serve as a framework for delivering academic and vocational curricula.

Data Collection. Connecticut has developed an excellent database concerning the implementation of a variety of STC activities. The database primarily consists of survey data collected for this study, data from the national evaluation, and reports from monitoring site visits to selected grantees. In addition, the RESCs are important sources of information because they maintain contact with local schools. The collection of accurate implementation data during 2001-02 and beyond will be important for determining the extent to which STC activities have been institutionalized by current grantees, and will be useful in guiding new grantees in developing and integrating school-to-career activities in their institutions.

Assessing the Impact of STC. Although there is information available regarding the STC systems that grantees have implemented, little information is available about the impact of these activities on students. Grantees perceive a wide range of benefits to students and their schools because of the STC systems they have developed. However, there is no evidence linking STC with student or school outcomes. State leaders may want to explore the relationship between STC activities that students have participated in and short-term outcomes such as attendance, grades, post-secondary plans, and performance on standardized tests. During the next year, student outcome data should be available through the national evaluation of STW. It might be possible to adapt the measures and methodology from the national evaluation to conduct similar research in Connecticut. Student impact data could be used for evaluation and continuous improvement of the state STC system, as well as for securing additional funds.

B. Site Visit Summaries

Overview

In June 2001, Abt Associates staff made visits to four Connecticut schools to interview local school and community partners about their STC systems. Abt Associates worked with SDE staff to identify four schools that had accomplished a level of STC integration which was more advanced than other grantees. The purpose of the site visits was to gather information describing four relatively mature STC models in a state where the nature of STC implementation can vary considerably from school to school because of the state's decentralized approach. Using the criterion that the schools be relatively advanced in their implementation of STC, Abt Associates' staff selected schools that reflected the diversity of the state in terms of size and location. The following grantees were the subject of site visits:

- Housatonic Valley Regional High School;
- Manchester High School;
- Montville High School; and
- Vinal Regional Vocational Technical School.

STC Coordinators were the primary interviewees. At each site, Abt Associates staff also spoke with teachers and administrators who have been active in building their schools' STC systems. In addition to coordinators, teachers, and administrators, the STC Coordinator at each site arranged interviews with other staff, depending on the nature of their STC system and the availability of the individuals on the date of the site visit. Other interviewees included career center managers, business recruiters, guidance counselors, students, and representatives from business/community partners.

Although each school designed and implemented its STC systems in different ways, some common characteristics were evident across the sites, suggesting that these attributes may be important for successful implementation. Listed below are some common characteristics shared by these four institutions.

- STC is viewed as an integral part of the school's mission. Although not everyone necessarily understood or supported STC when it was first introduced, there were enough key administrators, board members, teachers, and other staff that saw the benefits from STC and began the process;
- There was initial resistance or indifference from some teachers who saw STC as a temporary add-on program and/or an educational fad. A successful strategy to get teachers engaged in STC has been to demonstrate to them that the activities that they were already undertaking were aligned with STC principles. Some schools used the state

academic, employability, and technical standards to do this, while others relied more on the SCANS skills;

- The school/district has an effective and enthusiastic STC Coordinator with broad STC-related responsibilities. The coordinator is supported with district (not grant) funds. Staff and business partners at each of the four schools credit the coordinator with being a catalyst for the establishment of the school's STC system; and

- The school/district had some STC-related components such as a career center, internship program, ongoing outreach to business/community leaders, developmental guidance program, or Tech Prep program in place prior to the availability of state STC grant. Rather than using all of their grant money to create these fundamental components, the school/district could enhance them and devote more resources to things that would ensure sustainability such as curriculum revision, implementation of the career clusters, and professional development.

Summary descriptions of the STC systems in the institutions that were visited are presented in the remaining four chapters of this section.

I. Site Visit Summary: Housatonic Valley Regional High School

Overview. Housatonic Valley Regional High School, located in Falls Village, is a regional school serving seven towns that cover a wide geographic area in Connecticut's northwestern corner. The high school is part of Regional School District #1 and serves approximately 550 students in grades nine through 12. Housatonic was not one of the state's 14 demonstration sites.

Roles of Key Staff and Partners. The STC Coordinator, Linda DiCorleto, had been a full-time teacher and business liaison at Housatonic but has since moved into more STC-related responsibilities. The coordinator performs most of the business recruitment, networking with business/community partners, writing and managing grants, and coordinating internships, externships, and job shadows.

Administrators at the High School and throughout the school district strongly support STC principles, as does the school board, which has supported all STC-related proposals to date, and currently funds the STC Coordinator's salary. The board has not had to support all expenses, however, because the coordinator has raised money from private sources for various projects.

The school district has a history of partnerships with area businesses and a focus on career awareness. School staff felt that having these relationships in place was extremely helpful when it was time for Housatonic to respond to the state initiative and develop a more formalized STC system. For example, prior to state STC funding, the school district initiated Partners in Education with a few employers. Although the district serves an area that does not have many businesses, the number of partnerships has since increased to around 135. In addition, prior to the availability of state STC funds, Housatonic organized a committee consisting of school staff and representatives from 15 local employers to address the topic of employability skill standards. The group concluded that the national SCANS employability standards reflected the kinds of skills required by local businesses, and agreed to use SCANS as a tool for professional development and curriculum revision. Professional development was provided to teachers that presented SCANS as a set of skills that many teachers were already focusing on without realizing it. Field trips to businesses and presentations by business partners also were provided, which reinforced the message that SCANS skills are important in the workplace.

School staff and business representatives described a "network of community support" for Housatonic's STC endeavors. Stakeholders, including businesses, parents, and other community members, have supported student activities with funding or by providing technical expertise. Employer partners feel that they have benefited from this relationship as much as has the school. They cite short- and long-term benefits to bringing students in for shadowing and internships, and provide several examples of how student work has been valuable. For example, the Interlaken Inn, a conference center/resort and long-time STC partner, provided an opportunity for graphics design students to draw plans of buildings that were to be renovated. Their product

was superior to that of a private contractor hired to do a similar job. The Inn was able to use the student work and gave a donation to the school in appreciation. Another community partner has been the 21st Century Fund, a foundation underwritten by local businesses and individuals that funds activities such as teacher externships, the Robotics project, and a legislative internship project that sent students to Washington, D.C.

Teachers and administrators acknowledge that Housatonic's STC efforts have not been embraced by all teachers. Their strategy has been to target the most senior and respected teachers and to get them engaged. When other teachers see how these activities increase student participation and motivation, there is pressure on them to investigate ways they can infuse career awareness into their instruction or partner with other departments to develop interdisciplinary units. District leaders feel that this approach has been successful and has led to increased acceptance.

Career Clusters. Housatonic has targeted four of the state's eight career clusters: Business/Finance, Construction, Environment, and Health/Biosciences. It has several projects related to those areas, including:

- A Robotics project involving a team of students works with teachers from different departments and industry volunteers to develop robotics, and participates in regional and national competitions;
- Medical Transcription and Certified Nurses Assistant courses of study that lead to state certification;
- An Emergency Medical Technician (EMT) course using nationally-approved curriculum leading to state certification; and
- A Graphics Production Studio where students work with teachers and a volunteer graphic designer to develop and produce print materials for the school and clients from the community.

Most students select a career cluster during the 10th grade, after starting their portfolios and completing career interest inventories in the 9th grade. Students and their parents receive information about the clusters through direct mailings, newsletters, and PTA presentations. Housatonic's *Course of Study* booklet, a catalog developed and printed by the graphics class, outlines career pathways related to the clusters. Students are free to switch clusters if necessary. After students select a cluster, the STC Coordinator works to arrange job shadows for as many students as possible. Students are permitted two excused absences per year for shadowing, with the goal of each student having at least one shadowing experience during high school. During the 2000-01 school year, about 150 high school students participated in shadowing, which is about one-quarter of the 9-12 grade enrollment.

Curriculum. About two years ago, administrators and teachers from several departments began developing ways in which the district could move toward interdisciplinary instruction. With a school board resolution supporting interdisciplinary instruction, staff began working on integrating curricula from different departments. The original goal was for every department to have developed at least one project with another department; this was accomplished within the two-year period.

One of the first interdisciplinary projects involved collaboration between the Science and Agriculture departments. Together, they established a Aquaculture/Hydroponics[5] laboratory. Housatonic staff visited Newtown High School, which had developed a similar approach, and adopted their curriculum. The success of the laboratory has led to other projects, including courses joining Agriculture & English and Agriculture & Biotechnology. Through an ongoing Aquaculture course, students raise fish in large tanks and later sell them to restaurants. This allows students to gain experience with business, communications, marketing, and public policy as it pertains to health regulations. Flowers grown by the students in the Hydroponics lab are sold year-round to students, staff, and the general public. Agriculture and science teachers feel that there has been an increase in student motivation and excitement due to these interdisciplinary activities.

While most of these changes have occurred at the high school level, the elementary and middle schools in School District #1 have also made changes to curriculum and instruction in recent years, and have used the SCANS skills as a tool in doing so. Curriculum at the elementary and middle school levels has been revised using the SCANS materials, and professional development has been provided district-wide. In the classroom, some of the most visible differences are that group projects are now more common, and students must now routinely assess the quality of their own work and if applicable, their contribution to the team.

Other Components of the STC System. Housatonic operates a career center, which is managed by the STC Coordinator and one staff person. The center was begun with a grant but is now supported with district funds. It is often used by entire classes for career-related research, and is also used by members of the community by appointment. All high school juniors receive a career packet from the center.

Housatonic has designed a developmental guidance process with activities occurring at all grade levels. It begins in 9th grade, when students are required to take a Life Skills course, meet with counselors, and begin their portfolios. In the 10th and 11th grades, students are introduced to career clusters, complete interest inventories, and work with counselors to begin thinking about their post-secondary plans. During the 12th grade, students are applying to colleges or preparing to enter the workforce.

[5] Hydroponics is the science of growing plants without soil in nutrient-enriched water.

Housatonic has an articulation agreement with the Northwest Community Technical College to offer Tech Prep courses for 11th and 12th grade students. During the 2000-01 school year, more than 300 articulation credits were awarded to Housatonic students. In addition, the college has given financial and technical support for STC activities.

Several teachers have completed externships. For example, one science teacher has done three externships with Becton-Dickinson, a manufacturer of medical equipment that is the region's largest employer and a long-time partner for STC. He also completed an externship with ITW, a manufacturer that is one of the partners for the robotics project. Not only did these experiences allow him to develop his own skills, he also observed firsthand how these skills are applied, what kinds of skills are needed, and the importance of teamwork. A math teacher completed two externships, one with a bank and the other with a financial planner. She also came away with a greater understanding of how work is often done in teams, the importance of employability skills and work ethic, and the rules and technologies used in modern banking. These teachers report that their classroom instruction has been altered with lessons relating to their externship experiences, and that work in teams occurs more frequently.

Sustainability. It appears that all of the key features of Housatonic's STC system are sustainable for the near future because they have successfully revised the K-12 curriculum using SCANS, and provided related professional development. Since it has used state STC grant money and district funds to establish other fundamental STC components – a network of business/community support, a STC Coordinator, a career center, and a developmental guidance program – it can focus on expanding the considerable workplace, career awareness, and interdisciplinary opportunities for students that are already in place.

II. Site Visit Summary: Manchester High School

Overview. The Manchester School District, located east of Hartford, is a large and diverse suburban district serving about 7,700 students, 2,300 of which are enrolled at Manchester High School. Manchester High School was one of Connecticut's 14 STC Demonstration sites. It received a two-year demonstration site grant in 1998-99 and 1999-2000.

Roles of Key Staff and Partners. Because of Manchester's commitment to STC and its size, STC-related responsibilities are shared among several staff. The Director of Career and Vocational Education, a district administrator, serves as STC Coordinator. His responsibilities include administering the STC state grant and overseeing STC development activities K-12. Other key staff include a School-to-Business Coordinator, who is responsible for recruiting businesses and serving as a liaison with various civic and business groups; a Career Center Teacher, who is responsible for maintaining the career center, working with students, and helping other teachers infuse career-related topics into curriculum; and an Internship Teacher, who is responsible for placing students in internships and teaching the Internship course.

Several administrators have demonstrated their support of STC, as has the school board, which funds the salaries of the four staff listed above, each of whom is full-time. The superintendent and building principals have supported STC, and the district's Director of Curriculum has been a particularly strong advocate of using STC to drive broader district-wide improvement efforts.

Manchester has been effective at creating partnerships with the many businesses and community-based organizations that are located within the district. During the 2000-01 school year, it had partnerships with approximately 350 businesses. Most of these involved job shadows, participation in classroom activities and career fairs, and internships.

As with most education reform efforts, there are some teachers who have embraced STC principles and are eager to implement them in their classrooms, while others remain skeptical. District leaders presented STC not as an add-on program, but as an integral part of other school-reform efforts, including performance-based training (see below). As a result, there are many teachers who are now excited about using as many performance-based instructional units as possible that have career components and connections to businesses. They feel that their fellow teachers are increasingly adopting these models, partly in response to students who see their peers involved in interesting projects.

Career Clusters. Manchester offers each of the eight career cluster options to students. Beginning in the 8th grade, students are exposed to the clusters. During 10th grade, students are encouraged to complete at least one job shadow and to select a cluster. All students are required to select a career cluster. Information on career clusters is sent to students and parents, and appears in several formats including newsletters, the student/parent handbook. It also is

presented at parent meetings. During their junior year, students complete the Myers-Briggs inventory that helps them to identify personal areas of interest. Throughout high school, students work with guidance counselors and complete their ST.E.P.s (STudent Educational Plan). ST.E.P.s are an important part of Manchester's STC system; they are portfolios that contain education/career planning information. Plans are underway to digitize the ST.E.P. in the near future.

Curriculum and Professional Development. Prior to receiving the STC demonstration grant, Manchester had some career components in place, including Individual Education Plans, career planning, job shadowing, a career center, and Tech Prep. These mechanisms have since been enhanced, supplemented with other activities, and connected into a more comprehensive system.

Manchester's initial plan for use of the STC demonstration grant was more of an add-on program to enhance existing activities, not well integrated with curriculum and instruction. The plan was revised before it was implemented, and it made STC the thrust of a broader integrated school reform effort. STC was viewed as an "agent of change" by district administrators. The STC demonstration funds came at a time when the district was preparing to embrace broader reform, and STC principles were aligned with the performance-based focus that the district wanted to implement. The demonstration grant supplemented district funds to support extensive district-wide professional development for all staff grades 6-12, which focused on performance-based teaching and assessment and was aligned with state and national standards. District leaders believe that the training was a crucial step for the success of developing a STC system at Manchester.

As part of the training, each teacher produced several performance-based units for use in his/her classes. The templates teachers used included sections on work habits/employability skills, as well as skill development, problem solving, format of product/performance, and others.

An area of ongoing emphasis is the development of interdisciplinary units with career components. While encouraged by administrators, these activities have been undertaken because of the initiative of several teachers. Examples of interdisciplinary student projects are listed below.

- A collaboration among Tech Ed, Tech Prep, World Languages, and Science instructors resulted in the establishment of a manufacturing cell that designs, builds, and sells Bat Houses. A Biology class did research on bats and their usefulness in controlling the insect population. A Tech Ed class was responsible for using the research conducted by the Biology class to design and build houses appropriate for a variety of bats. A Tech Prep - Communications class developed a brochure to market the houses and designed a logo. A World Languages class developed a Spanish version of the brochure. So far, more than 50 houses have been sold. Similar ventures are underway in four other student enterprises;

- In a Tech Prep - Communications course, students produce products for real-world clients. Students work with local non-profit organizations and develop marketing materials such as brochures and web sites; and

- A team of students developed a video to show to businesses at a business partner luncheon highlighting experiences that students had with job shadowing and internships, and how those experiences positively impacted their career and education plans.

A variety of STC-related components are present at the district's middle and elementary schools. The middle schools have career centers with information about the career clusters, job trends, and other related information. Additionally, the middle schools' developmental guidance program has recently been updated to run parallel with the STC system, and the Curriculum-Based Mentoring program brings local business people into the classroom to help supplement classroom instruction. Elementary schools are implementing the Megaskills initiative, which organizes instruction around a core set of skills. The skills – including teamwork, motivation, and responsibility, among others – are very similar to both the state's employability skills and the national SCANS skills. A core set of teachers has been trained as trainers to implement this model. Recently, curriculum personnel from elementary, middle, and high school levels began to meet to discuss inter-departmental linkages and continuity between levels.

Tech Prep pathways are available in every career cluster, and the school district has an articulation agreement with Manchester Community College and Capital Community College. Currently, approximately 25 courses are articulated for credit. Plans are underway to develop agreements with additional colleges.

Manchester's high school dropout rate has declined over the past five years from eight percent to approximately two percent, and administrators feel that part of the decline is attributable to the STC system. An increasing number of students have plans for careers and higher education and are doing more interdisciplinary projects tied to real world issues. Many teachers and administrators feel that these opportunities have helped improve student motivation.

Other Components of the STC System. Manchester operates several school-based enterprises, including an in-house catering business and a school store. The school store is operated by students and is self-supporting. In fact, it earns enough to pay rent to the school and its profits are used for student scholarships.

A School-to-Career Advisory Committee has been in place, sometimes under different names, for more than 30 years. Its purpose is to assist with the development of skill standards and to aid the school in identifying student employment opportunities. It consists of approximately 20 representatives from the district, higher education, businesses, and community-based organizations.

Manchester High School's well-stocked career center contains career resources, CBIA videos, as well as career cluster and college information. Career center staff work with teachers to help them find ways to integrate career components into instruction. *Bringing Careers into the Classroom* is a resource guide published by the center for teachers of Business, English, Family/Consumer Sciences, Science, and Technology.

During the 2000-01 school year, 120 students were placed in internships. Four student internship experiences are summarized below.

- A senior with an interest in law enforcement interned with the Manchester police and has learned how the department operates. She plans to go to college to pursue law enforcement as a career;

- A junior with an interest in mathematics completed an internship with the high school's career center. She conducted a variety of research activities including a statistical analysis examining the center's patterns of usage. She obtained an internship with a local hospital to do similar work and is making post-secondary plans;

- A senior with interests in business and marketing has been working at the school store, where she has accounting and budgeting responsibilities. She maintains an interest in business but also would also like to explore careers in child advocacy and plans to study that subject in college; and

- A senior, who had been interested in a career in law, changed her focus after taking law-related classes. She now is studying psychology and social work, and obtained an internship with an agency that works with troubled children. She plans to major in psychology in college.

Manchester students participated in more than 1,500 job shadows during the 2000-2001 school year. Special education students also are engaged in STC activities. They take an interest inventory; outline their career/education goals; develop portfolios, resumes, and business cards; practice interviewing; and work on interpersonal and teamwork skills needed for the workplace. Students also go on field trips to businesses like Allied Printing. All students complete job shadowing, and many do internships.

Staff recently completed the development of Manchester's Career Advisory Curriculum, which will be implemented in all four high school grades during the 2001-02 school year. The curriculum addresses the CBIA employability skills in conjunction with a character development initiative. The entire high school student population meets in groups of 20 with two staff members once per month.

Externships are available for teachers. In 2000-01, seven completed externships, and the district plans to restructure the application process to attract more teachers.

Sustainability. None of Manchester's core STC components – STC Coordinator and related staff, career center, school enterprises, ongoing professional development, etc. – are currently being supported by state STC funds. The district has made commitments to those areas and plans to support them for the foreseeable future. Grants have been largely used for curriculum revision (which is nearly complete), and the initial development of enterprises and activities for students. If additional funds were available, administrators would consider supporting additional curriculum revision and possibly externships, though those activities can continue without external support.

The high school staff, students and parents have recently completed *Vision 2020*, a strategic plan that will guide decision-making for the next several years. The plan calls for an expansion of the STC system, which will help to ensure that the district will be able to sustain current STC components and build on them in the future.

III. Site Visit Summary: Montville Public Schools

Overview. Located in southeastern Connecticut, Montville Public Schools serves approximately 3,000 students, 760 of whom are enrolled in the high school. The district covers a fairly large area, including both suburban and rural areas. The high school is located in Oakdale, CT. Montville was one of Connecticut's 14 demonstration sites. It received a two-year demonstration site grant in 1998-1999 and 1999-2000.

Roles of Key Staff and Partners. The STC Coordinator, Kathy Racette, came to Montville as a consultant in early 1996 to develop the district's STC plan and eventually became the coordinator. She oversees various STC-related activities such as business recruitment, school enterprises, and management of the state STC grant, and has been involved with broader school reform efforts. Other key staff include an internship instructor who teaches the internship class, recruits businesses, and oversees the school store; and a career center teacher who manages the career center and works with students, teachers, and classes. For the first two years of the state STC grant, these positions were grant funded. Since then, they have all been supported with district funds.

For a relatively small district, Montville has established a large number of partnerships to support STC. During the 2000-01 school year, it had partnerships with approximately 175 businesses and community-based organizations. Partners include the Mohegan Sun casino, Pfizer, Radisson hotels, a local credit union, Town of Norwich Court House, and a local day care. Montville has established a system-wide STC Committee that includes representatives from the school district, businesses, government, and parents.

At first, there was resistance from some teachers who saw STC as an add-on vocational education program. The STC Coordinator and other staff worked to demonstrate that much of the existing curriculum was aligned with STC principles.

Curriculum and Professional Development. Initially, some individuals in the district thought of STC as more of an add-on program, but when administrators and teachers examined their existing curriculum against the state skill standards, they realized that many of the key STC principles were already in place. Montville developed a five-year K-12 school reform action plan that featured STC as a driver.

In 1999, Montville published a large volume of classroom activities that demonstrate examples of workplace relevance in the classroom. Developed by Montville teachers, there are sections on almost every academic subject.

More recently, teachers from different departments have been working together to develop interdisciplinary units. For example, an ambitious project for a senior-level mathematics course

involved designing a mini golf course. The teacher eventually recruited a technology class, and the two groups worked together to complete the project. Other interdisciplinary projects have involved staff from the Science and Language Arts departments, which worked together on a forensics/criminology project.

All new teachers meet with the STC Coordinator to talk about the aspects of Montville's STC system. In addition, there have been several professional development opportunities on STC-related topics, including some workshops focused on rewriting or reviewing curricula to enhance career-related features.

Montville's STC-infused school reform plan has led to the creation or substantial modification of several courses, including English Communications, Video Technology, Video Production, Digital Imagery, Culinary Arts, Advanced Child Development, and Desktop Publishing. In addition, there is an Internship course in which students write about their career choices and the education/training that is required.

Some seniors have completed Senior Projects in their area of interest. During the 2000-01 school year, teachers are developing an action plan to include all seniors in this activity. The goal is to have students select a topic related to their career cluster such as Genetic Research, Dance, and Auto Building for example, then define their goals, objectives, a means of assessing the project, and a committee to grade it. The committee would include a committee member with expertise in the subject area (e.g., a genetic research scientist, dance instructor, or auto mechanic).

The district has developed STC curriculum guides for both elementary school and middle school, which include suggested activities for each grade. Elementary school curricula were revised so that the content from each of the eight clusters is introduced at some point between grades K through five. Originally, the system was designed so that one grade level would focus on one career cluster, but the system has since been modified to introduce topics at multiple points. Currently, staff are revisiting elementary level curricula, in particular to look for additional opportunities for interdisciplinary units. To supplement classroom instruction, elementary schools organize an annual Mini Career Day for parents to talk about their careers and why academic subjects and employability skills are important.

Middle school curricula were revised so that the content from each of the eight clusters is introduced at some point between grades six through eight. Teachers have integrated several interdisciplinary projects with 'real world' applications. For example, a group of 6th graders noticed that a local supermarket was not recycling properly. They developed a recycling plan, and after the store manager implemented it, he found that the student's plan saved several thousands of dollars a year. The following year, all 7th graders, working in teams, toured the store on an operations review to see how the store worked. To help students transition to high school, there is an orientation for 8th graders and their parents that describes the high school

experience and introduces the career clusters. Additionally, 8th graders complete an interest inventory and do a small portfolio as practice for the ones they will begin in the 9th grade.

Career Clusters. Montville has targeted each of the state's eight career clusters. Students may select a cluster as early as the 9th grade, but every student must select one by the 12th grade. There is a sequence of events to help students make this choice. In the 9th grade, students meet with guidance counselors, complete another interest inventory, and begin doing research on careers of interest and the education/training that is required for each. All students keep a portfolio. Initially, Montville adopted a commercial portfolio package ("Get a Life"), but staff didn't feel that it worked well so they developed a different design.

Other Components of the STC System. Montville's career center is equipped with several internet-ready computers, college information and applications, career exploration materials, military information, and related resources. Grant money initially was used to purchase some equipment and materials, but the center is currently supported with district funds. Included in the center's inventory is the Choices software program that helps students identify their interests and the career fields related to those interests.

The Department of Guidance and Counseling Services has been an important part of the STC system. Located next to the career center, it provides a *College & Career Planning Guide* for students and parents describing college requirements and application processes. The department also oversees students' portfolios. They are currently revising the portfolio format.

Montville students interested in Internships take a year-long course, the first half of which is classroom-based, and the second half of which is at the work site. During the first half, students obtain information about careers, and prepare resumes and cover letters. At the end of their internship, students make a presentation to the rest of the class describing their experiences. After the non-paid internship, many students have been hired for the summers by their employers.

During the 2000-01 school year, approximately 72 students from the high school completed an internship, 100 completed job shadowing, and 247 completed a service learning project. Staff provided several examples of how these types of work-based experiences have benefited students. Listed below are a few examples.

- One student, who was struggling academically, did a graphic design internship at one of the local casinos. They retained him as an employee, and he was able to graduate and is considering going to college;

- A student interested in pursuing a career in Nursing completed a job shadow at a local hospital with a registered nurse. She discovered that nursing was not her real interest, changed her focus to pharmacy, and is now attending school to be a pharmacist. Another

student thought he wanted to be an accountant. After a job shadow with an accountant, he decided that a career in the stock market would better suit him, and is currently pursuing it; and

- Some internships have turned into full-time employment. One student completed an internship with the fire department, was hired full-time after completing high school, and now hosts Montville interns.

Montville has two enterprises underway. One is a school store that is run by students with staff guidance. The other is a new Culinary Arts project operating out of a new kitchen facility. It hopes to begin a catering business during the 2000-01 school year.

To organize information for new students at the high school, a CD was produced called "Montville Public School System's School-to-Career Auto-Start Menu." It contains a variety of documents and links related to the career clusters, college applications, school store, school policies, and more.

There have not been many teacher externships to date because teachers are reluctant to give up time in the classroom, and there are limited resources available to support the costs. If more funding were available, expanding externships would probably be a priority.

Montville operates a Mentoring Program that matches students with an adult from the community. After mentors participate in an initial screening phase, receive training, and attend an orientation session, they are matched by the school with mentees who share simiarl interests and career goals.

Sustainability. Montville has used state grant funds for the initial support of staff, curriculum development, computer and other equipment purchases, and start-up costs for enterprises like the Culinary Arts kitchen. District funds now cover STC staff and other day-to-day expenses, so the absence of state funds would not directly impact sustainability of fundamental STC components. If additional funds were available, administrators would consider using them to support externships, a new school-based enterprise, or additional review of curriculum. However, these activities can continue without external support.

IV. Site Visit Summary: Vinal Regional Vocational Technical School

Overview. Vinal Technical High School is located in Middletown, which is in the south central part of Connecticut. It serves approximately 540 students in grades 9-12. As one of the state's 20 Regional Vocational Technical Schools (RVTS), it draws students from 26 different school districts. Vinal was one of Connecticut's 14 STC demonstration sites. It received a two-year demonstration site grant in 1998-1999 and 1999-2000.

Roles of Key Staff and Partners. The STC Coordinator, Robert Cooke, has a full-time position and is supported by the school budget. In addition to managing the STC grant, he interacts with businesses and business groups, staffs the career center, visits sites where students are working to check on student performance and safety, and teaches class for freshmen and juniors focusing on both study and employability skills. During the 2001-02 school year, the junior class will be using a virtual business plan application to learn how to author a business plan. Prior to becoming the coordinator, he was an instructor at Vinal.

Since part of technical schools' mission has been to prepare students for specific careers, there were several administrators at Vinal and within the RVTS system that were early supporters of STC, including the school Director and Assistant Director.

Because of its longstanding career focus, Vinal had relationships with several area businesses. With STC, it has been able to build on those partnerships, which now number about 65.

Some Vinal teachers initially resisted the school's participation in the STC demonstration program. It was seen as an add-on, duplicative program by some, while others were concerned that the school would not be able to implement the kinds of reforms required by the grant in such a short time (two years). The STC Coordinator and other staff have addressed these concerns by demonstrating the alignment of the state's STC skill standards with SCANS and the school's existing curriculum.

Career Clusters. Vinal has implemented five of the state's eight career clusters, listed below[6].

- Arts & Media
- Business & Finance
- Construction Technologies & Design
- Retail, Tourism, Recreation and Entrepreneurship
- Technology, Manufacturing, Communications & Repair

[6] Although Health & Biosciences is not one of it's career clusters, it does offer health-related coursework through its three semester, full-time Practical Nurse Education program for graduates of vocational technical schools.

Prior to designing and implementing their STC system, Vinal had several course offerings in the five subject areas. Technical high schools like Vinal require students to select a Technology. Vinal offers 11 technologies, which are listed below.

- Auto Body Repair
- Automotive Mechanics
- Carpentry
- Culinary Arts
- Electrical
- Electro-mechanical
- Hairdressing, Cosmetology, and Barbering
- Heating, Ventilation, and Air Conditioning
- Machine Drafting
- Manufacturing Technology
- Microcomputer Software Technology

Every student selects a technology area, and each technology falls under one of the five career clusters. Students are free to switch to another cluster/Technology, but doing so after grade 10 can be difficult because a certain number of hours of instruction are required in each area. Students who successfully complete Vinal's graduation requirements receive both a high school diploma for their academic work and a certificate for their technology area.

Prior to their first year, incoming freshmen and their parents participate in an orientation that exposes them to the clusters/technologies. They continue to investigate those areas as freshmen, in addition to completing an interest survey, touring the workshops used by each Technology, and occasionally participating in off-site field trips for tours of area businesses. All 9th grade students attend a "Freshmen Foundations" class taught by the STC Coordinator at the Career Center. Over 18 class periods, students work on developing skills they will need in school and the workplace such as information gathering and proficiency with computers. State demonstration grant money was used to establish this course and purchase a commercial curriculum ("Skills at Work") for this course. By the end of their first year, students are expected to select a cluster/Technology.

Students also begin compiling their portfolios during their first year. Included in Vinal's "School-to-Career Student Career Portfolio" are student academic work, career interests/goals and selected cluster/Technology, worksite experiences, resume, and contacts with businesses. Starting in the 2000-01 school year, portfolios will be electronic with web-based components.

Every Technology area (also called "Shops") has a Shop Advisory Committee, which includes representatives from business/industry and higher education. Committee members provide input related to technical and employability skills and serve as contacts for field trips, job shadows, and internships.

Curriculum and Professional Development. Because preparing students for careers has always been central to its mission, Vinal's approach to STC with regard to curriculum has been to use the state academic, employability, and technical skill standards and the national SCANS skills as tools for examining its curriculum to assure that those skills are addressed.

Professional development initiatives include an annual workshop at Central Connecticut University for all staff, and training related to project-based learning. As a result of the latter, several teachers have integrated projects into their curriculum. Vinal staff feel that conference attendance has become more widespread in recent years, which is due in part to STC. Much of the STC-related professional development was provided through the RESC.

One of Vinal's goals in enhancing its STC system was to increase its level of technology use, recognizing that a high percentage of its graduates need those skills. Much of the curriculum that has been re-examined has been altered to include a technology component. For example, software was purchased for a redesigned Algebra class, and the NFTE (National Foundation for Teaching Entrepreneurship) curriculum was purchased that includes a web-based component called Biz Tech. Using the Biz Tech program, students learn about business, marketing, and entrepreneurship, and develop their own business plans.

A challenge unique to technical high schools is that they receive students from several districts, each of which has its own approach toward STC. By the time students get to Vinal in grade nine, some have had exposure to careers and the state's career clusters, have completed interdisciplinary team-based projects, have filled out interest inventories and thought about education/career plans, and have interacted with business/community partners. Others have not. Vinal cannot directly influence other schools' K-8 STC systems, but it has reached out to them by participating in career days and hosting tours of visiting students at its facility.

Other Components of the STC System. Established with state funds, the Career Center is the STC hub of the school. Grant funds have been used to stock the center with several computers, software, and career-related materials. It is one of two computer labs with Internet access, so it is used heavily by individuals and classes for education/career research and general web research.

Instead of internships, technical high schools offer Cooperative Work Experiences (CWE) in the area of his/her cluster/Technology. Every student has the opportunity to complete a CWE and is encouraged to do so, but not all choose to. In addition to getting paid and gaining work experience, CWE students are mentored by their worksite supervisors.

Students also have opportunities to do job shadows and field trips. During the 2000-01 school year, about 20 CWEs and 30 job shadows were completed. One barrier to arranging student worksite experiences is lack of available transportation. Unlike school districts, Vinal does not operate school buses, so parents, students, school staff, and businesses must provide transportation.

Each of the Technology areas offer real-world work experiences for students. For example, Juniors and Seniors enrolled in the Automotive Mechanics program have opportunities to work on customers' car in the school's auto shop. In the Carpentry program, students often work off-

site with contractors and customers on real projects such as building decks and installing siding. Similarly, students in the Heating, Ventilation, and Air Conditioning program have opportunities to do work for both inside (school) and outside customers. Because the various shops operate like businesses, Vinal has hosted job shadows students from other high schools.

Vinal recently piloted a school-based enterprise called Web Works, involving a team of students that contracted with clients in the community for web development work. There were problems providing staff support for the enterprise, and it had to be discontinued. However, there are still opportunities for students to do web design through coursework and extracurricular activities. The students that participated in the pilot will work with students in creating digital portfolios.

Vinal is currently planning on developing a database to track student worksite experiences, including the job shadows, field trips, and CWEs they have completed, and students' perceptions of the value of those experiences. The database will be useful for tracking levels of student participation, business recruitment, and future student placement.

Sustainability. Vinal's near-term STC goals are to enhance the activities that it has in place, such as increasing participation in job shadows and CWEs. Initially, grant funds were used for staff support, curriculum purchase and development, and equipment/technology purchase. These things now are provided for in the budget, so the longer-term prospects for sustaining STC components are good. Vinal staff feel that technology is important for sustainability. They have invested in computers and software and are working on networking and increased internet access. Not only are many career-related curricula available electronically, but students seem to be more interested in learning activities involving computers and other technologies in contrast to traditional paper & pencil approaches. Additionally, computer skills are demanded by increasing numbers of employers. Staff feel confident that funding to maintain and enhance technology will be available.

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